



Traffic Guidelines Manual

ORIGINATOR Director, Bureau of Traffic Operations		4-2-4
CHAPTER 4	Signals	
SECTION 2	Traffic Control Signals	
SUBJECT 4	Flashing Operations	

A. General

Reference is made to the *MUTCD*, Sections 4D.28, 4D.29, 4D.30 and 4D.31, and Wisconsin State Statute 346.37, 346.39, and 346.40.

There are four types of flashing operations for traffic control signals: start-up flash, emergency flash, program flash, and manual override flash. Each of these conditions are described briefly below:

- New Signal Installation Start-up flash operation is used to acclimate motorists to the revised form of intersection traffic control at a given location prior to initiating steady stop-and-go mode operation.
- Emergency flash operation may be caused by controller malfunction, utility service disruption, or physical damage to the installation (such as a pole knock-down).
- Program (time-of-day) flash operation is generally limited to use at pretimed signal installations where no actuation exists to detect vehicles and provide variable green time based on actual approach demand. This type of flash operation is used during off-peak hours (for example, from 10 PM to 6 AM) to reduce intersection delay at pretimed signals.
- Manual Override flash operation may be used by law enforcement officers that assume intersection traffic control associated with special events or incidents.

In addition to flash operation, two flash modes are used: red-red or yellow-red flash.

B. Policy

New Signal Installation Start-up flash operation

At newly installed signals that have just become operational, consideration *should* be given to using flash-mode operations if the intersection was open to traffic during construction. This is used to acclimate motorists to the revised form of intersection traffic control at a given location prior to initiating steady stop-and-go mode operation.

Engineering judgment **shall** be used to determine the need for and duration of flash-mode operations. Consideration *should* also be given to the location of the signal & type of motorists that use the route. For example, along a commuter route, new signals *may* be flashed for a length of time between Monday & Friday. Similarly, new signals along a tourist route can be flashed during a weekend period.

Start-up flash for new signals *should* reflect the prior intersection traffic control condition. That is, if a signal is installed to replace a two-way STOP condition, a yellow-red flash mode *may* be used. If a signal is installed to replace an all-way STOP condition, a red-red flash mode *may* be used.

Program (time-of-day) flash operation

Pre-timed signals on the STH system *may* use program (time-of-day) flash operations but *should* be scheduled for upgrade to semi-actuation, at a minimum. Traffic signals on the STH system that are fully or semi-actuated **shall not** use program (time-of-day) flash operations. Actuated signals can detect and respond to actual demand on conflicting approaches; efficiencies gained by this type of operation at a pretimed signal do not necessarily exist at an actuated signal. In addition, the transition out of flash operation to steady stop-&-go operations *may* be a time of potential confusion to motorists.

Traffic signals on the STH system that are interconnected with rail-grade crossing systems **shall not** use program (time-of-day) flash operations.

Emergency flash operation & Manual Override flash operation

Regardless of whether program flash operation is used at a particular installation, the flash mode must be determined for emergency and manual override situations. The bullet points below discuss these two modes:

- Red-Red (R-R) flash mode is prescribed for most signalized intersections, as this mode tends to reflect motorist expectancy. On multilane highways, this type of operation will benefit motorists on the side road since clearance distances can be large.
- Yellow-Red (Y-R) flash mode *may* be appropriate at signals where overall intersection volumes are relatively light & the proportions of mainline volumes significantly exceed those on the side road. This rule-of-thumb reflects a consideration for intersection delay and maintaining priority based on route significance. However, driver expectancy may be violated causing drivers to unnecessarily stop on yellow, thereby creating a potential safety hazard for other drivers and negating the potential delay reduction.

Even if an isolated intersection meets the broad volume criteria above for yellow-red flash mode, other signalized intersections along a corridor *may* dictate the type of flash mode that *should* be used. For example, if adjacent signalized intersections use a red-red flash mode, driver expectancy *may* determine that any additional signals in the

immediate area operate in the same manner; regardless of this generalized volume criteria.

C. Support

Whether a signal is operating in steady stop-&-go mode, R-R or Y-R flashing mode, or non-operable (dark) mode, driver expectancy *should* be considered. Careful engineering judgment *should* be used to balance the needs of safety, efficiency and motorist expectancy.